CORNELL EXTENSION BULLETIN 781 REVISED JANUARY 1959

HAY and PASTURE SEEDINGS for 1959

By WALTER L. GRIFFETH

NEW YORK STATE COLLEGE OF AGRICULTURE

IMPROVE A PASTURE IN '59 FOR HIGHER PROFITS IN '60.

Hundreds of thousands of acres of New York pasture produce feed during May and June, but are parade grounds (or obstacle courses) for the rest of the summer. Pasture is the cheapest source of livestock feed but New York's most neglected crop.

Proper liming and fertilization, better seeding mixtures, and careful management will triple the production of many pastures.

According to the 1954 census only 6 percent of the 4.5 million acres of cropland hay and pasture were fertilized. Much pasture land is producing weedy or low-yielding plants that would give a low return for fertilizer or lime. Re-seeding with an adapted pasture mixture may be necessary for higher returns.

Pasture Improvement Outline

1. **How much?** Not more than one-half acre of seeded pasture or one acre of permanent pasture should be improved for each cow-equivalent unless excess spring growth can be harvested as hay or silage.

2. **What land?** "Pasture improvement begins at home (or at least near the barn.) Improve the best; you may not need the rest." Improving rough, stony, brushy pastures is costly. A few dollars spent improving the better fields will probably yield much more than many dollars spent reclaiming the "wilderness." The best pastures are often part of a crop rotation where plowing and reseeding is practiced regularly.

3. **How?** Kill the old sod by plowing it if possible. Chemical renovation with a grass killer followed by heavy discing may be useful for areas difficult to plow. Graze hard to weaken sod before plowing or renovating.

4. **What seeding mixture?** Use Empire birdsfoot trefoil for long-term pasture on land difficult to plow. Try the new mixture of early-type and Empire birdsfoot trefoil for higher early yields plus longevity.

   The early birdsfoot trefoil is superior in seeding mixtures for pasture or hay on the wetter soils that are included in a crop rotation. Rotational grazing improves stand longevity and production.

   Alfalfa mixtures are the most productive for better drained soils. Rotational grazing is important. On soils liberally fertilized and well supplied with moisture through the summer, ladino clover is an excellent legume in mixtures for short term pasture.

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Timothy is the preferred grass with birdsfoot trefoil. Bromegrass is excellent with alfalfa or ladino clover and gives more growth than timothy. Orchard grass is fast growing and should be used only with ladino clover or alfalfa.

5. **Lime and Fertilizer!** Lime and phosphorus and potash fertilizers topdressed according to soil test results, can double the yield of existing pastures, but the response may be slow. Nitrogen fertilizers applied to good grass pastures give quick results when moisture is favorable.

   Proper liming and fertilization are essential for profitable pasture improvement.

6. **Seeding the Pasture!** Shallow soil coverage is important for successful seedings. Cover the seed with ¼ to ½ inch of soil. Band seeding over the fertilizer may be especially helpful in getting the plants off to a fast start.

7. **Manage the new seeding!** A grain crop may be too competitive on many pasture fields. If the pasture seeding is made with a grain crop, careful grazing or cutting for silage or hay will usually improve the forage stand.

   Mowing may be necessary in August to remove weed competition.

   Grazing or mowing should be completed about 6 weeks before the average date of the first killing frost to prevent injury and winter killing of the pasture plants.

   Over-grazing and late fall grazing cause many pasture seeding failures.

Alfalfa

Narragansett yields well and is adapted to a range of soil drainage conditions. It is superior for up to 4 years under two cutting management, and on soils with moderate drainage or spots of somewhat poor drainage if limed to pH 6.8.

DuPuits is the top yielding alfalfa for well drained soils. It grows rapidly and blooms early; will make 3 to 4 cuttings a year if lime and fertility are right.

Alfa (formerly Scandia brand) has been similar to Du Puits in a limited number of tests.

Vernal is a superior wilt-resistant, winter-hardy alfalfa for long-term stands.

Ranger should now be replaced by the superior variety above that best suits each situation.

Birdsfoot Trefoil

Viking is the best variety of early type birdsfoot trefoil. It is excellent for seedings for 3 or more years on fields not suitable for alfalfa. A mixture of Viking birdsfoot trefoil, Narragansett alfalfa and timothy is an excellent seeding for fields with a spotty drainage pattern.

Mansfield is similar to Viking but has averaged a slightly smaller yield.

European is also similar to Viking. Yields average about 10 percent below Viking and are variable from lot to lot of European seed.

Empire blooms 10 to 20 days later than Viking or alfalfa. It is recommended for long-term pasture under continuous grazing, or for later cut hay on soils too wet to harvest by July 1. Seed supplies are abundant and prices are lower. This is the year to make full use of this valuable legume.

Red Clover

Dollard is resistant to northern anthracnose, a disease that sometimes causes serious leaf loss in other red clover. It is recommended for the North Country and the Southern Tier.

Pennscott is higher in yield and has more second-year growth than common red clovers. It is recommended for central New York and the Hudson Valley.

Commercial seed produced in the Northeast is superior to western seed.

Ladino Clover

Ladino is primarily recommended in mixtures with alfalfa and either bromegrass or orchardgrass for silage and rotational or aftermath grazing in areas that have good summer rainfall.

Timothy

Climax is a leafier variety, 1 week later than Common. It is recommended for use in mixtures with any of the legumes.

Smooth Bromegrass

Saratoga is a fast-growing bromegrass developed at Cornell. It is recommended for seeding only with vigorous alfalfa varieties. Seed supply is limited in 1959.

Lincoln, Achenbach and **Common** smooth bromegrass from Nebraska or Kansas are superior to Canadian or Northern Common bromegrass in stand establishment and yield.

ANNUAL FORAGE GRASSES

Forage production on most farms should be based on the perennial legumes and grasses. The annual crops — sudan grass, millet, and small grains — often help to complete the forage program particularly when forage seedings fail.

Sudan grass

Piper is the best variety for New York. It is early and higher in yield than Common or Sweet. Piper is lower in hydrocyanic (prussic) acid than other varieties. For pasture or silage, plant it just after corn. One-half acre of good, early-planted sudan will pasture 1 cow for the last part of July, all of August, and a week or two in September.

Millet

Japanese Millet is adapted to a colder climate than sudan grass and may be grown at higher elevations and farther north. It makes less recovery after pasturing than sudan grass.

Rye

Rye may be used for fall or early spring pasture to extend the grazing season on fields that are not too wet.

Balbo rye starts growth earlier in the fall and spring than other varieties. Tetrapetkus, a variety from Germany, is reported to have high grain yields, but has not been tested thoroughly as a forage crop in New York.

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Cooperative Extension Service, New York State College of Agriculture at Cornell University and the U. S. Department of Agriculture cooperating. In furtherance of Acts of Congress May 8, June 30, 1914. M. C. Bond, Director of Extension, Ithaca, New York.

FLP 20M

1959 SEEDINGS FOR HAY, SILAGE, AND PASTURE

Recommendations of the Departments of Agronomy and Plant Breeding

Use and Length of Stand	Soil Drainage Class	Legumes and Grasses	Pounds per Acre*	Notes on Seedings—Varieties, Management, Adaptation Use Certified Seed of Named Varieties
ALFALFA MIXTURES **Soil should be limed to pH 6.8 before seeding. For high yields and for longer lived stands, fertilize adequately when seeding, and topdress each year.**				
HAY, SILAGE, ROTATED PASTURE From 1 to 3 years	WELL DRAINED	Alfalfa Timothy	8 6	For top quality and yields use DU PUITS or NARRAGANSETT on soils with high lime and fertility and cut 3 times. DU PUITS for highest yield: first cut late May to early June; 2 more cuts at early bloom. NARRAGANSETT blooms 1 week later than DU PUITS.
HAY, SILAGE, ROTATED PASTURE From 2 to 5 years	WELL TO MODERATE	Alfalfa Smooth Bromegrass (or Timothy)	8 8 (6)	NARRAGANSETT is first choice except where wilt is severe. VERNAL or RANGER for stands to be down 4 or more years where wilt kills alfalfa. SMOOTH BROMEGRASS is preferred to timothy for stands left down 3 or more years.
MARKET HAY From 1 to 5 years	WELL TO MODERATE	Alfalfa	10	DU PUITS or NARRAGANSETT is first choice for stands up to 3 years. VERNAL or RANGER is preferred for 4 years or more if bacterial wilt is severe.
HAY, SILAGE, ROTATED PASTURE 3 years or more	MODERATE TO SOMEWHAT POOR	Alfalfa Early Type Birdsfoot Trefoil Timothy	6 4 6	NARRAGANSETT alfalfa and VIKING birdsfoot trefoil are an excellent combination for fields with spotty drainage patterns. NARRAGANSETT gives high yields for 2 or 3 years. TREFOIL fills in the wet spots and takes over as alfalfa thins out. MUST be LIMED and FERTILIZED for ALFALFA.
ROTATED PASTURE or SILAGE From 2 to 5 years	WELL TO SOMEWHAT POOR	Ladino Clover Alfalfa Smooth Bromegrass (or Orchardgrass)	1 6 8 (6)	A high-yielding mixture for season-long rotated pasture and silage. Use NARRAGANSETT alfalfa. Bromegrass is easier to manage than orchardgrass but less productive in mid-summer.
BIRDSFOOT TREFOIL MIXTURES **Soil should be limed to pH 6.4 before seeding. For high yields aud for longer lived stands, fertilize adequately when seeding, and topdress each year.**				
HAY, SILAGE, ROTATED PASTURE 3 years or more	POOR TO WELL	Early Type Birdsfoot Trefoil Timothy	5 to 8 5	VIKING or EUROPEAN better than red or alsike clover in meadows to be left down 3 or more years on moderate to poorly drained soils. Establishes quicker and recovers quicker after cutting than Empire. VIKING yields 10 per cent more than EUROPEAN and 20 per cent more than EMPIRE.

SEMI-PERMANENT PASTURE	POOR TO WELL	Birdsfoot Trefoil: Empire	4	Try this mixture for reseeding long term pasture. Early type birdsfoot trefoil is used for high production in the first years. EMPIRE, while a slow starter, stands hard continuous grazing better than the early type giving higher yields in later years.
		Early Type	4	
		Timothy	6	

RED CLOVER MIXTURES

Good for 1 to 2 years; poor choice for longer stands. Soil should be limed to pH 6.4 before seeding. For high yields and for longer lived stands, fertilize adequately when seeding, and topdress each year.

HAY, SILAGE, ROTATED PASTURE From 1 to 2 years	POOR TO WELL	Medium Red Clover	6	For poorly drained soils, substitute 2 pounds of alsike for 2 pounds of red clover, reduce timothy to 4 pounds, and add 2 pounds of redtop. Use DOLLARD for North Country and Southern Tier. PENNSCOTT superior to COMMON.
		Ladino Clover	1 or 1	
		Timothy	6 or 4	
		(Alsike Clover)	2	
		(Redtop)	2	
HAY, SILAGE, ROTATED PASTURE From 2 to 3 years	WELL TO SOMEWHAT POOR	Medium Red Clover	4	This mixture is high yielding for 1 year. Succeeding yields will usually be lower than alfalfa mixtures without red clover when lime and fertility are adequate. Use NARRAGANSETT or DU PUITS alfalfa depending on the drainage conditions if soil pH is at least 6.0.
		Alfalfa	4	
		Ladino Clover	1	
		Timothy	6	

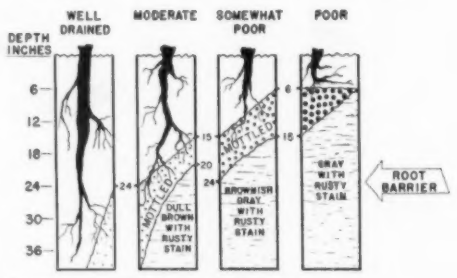
SPECIAL PURPOSE SEEDINGS

Use	Legumes and Grasses	Pounds per Acre*	Notes on Seedings
Summer Pasture or Silage	Sudan Grass	30	Piper sudan is the best variety for New York.
Emergency Hay or Silage	Japanese Millet	16	For poorly drained soils or high elevations; Piper Sudan preferred on soils of good to moderate drainage. Not ready for hay until September when weather is often poor for curing.
For Swampy Fields	Reed Canary Grass	8	Use for long-term stands on land too wet or too often flooded to grow other recommended hay and pasture crops.
Diversion Ditches†	Birdsfoot Trefoil	7	For areas such as channels and backslopes which are difficult to seed, double the rate of seeding.
	Timothy	5	After July 1 sow 2 bushels of rye, mow when 15 to 18 inches tall; seed birdsfoot and timothy the following spring.
Outlets and Sod Waterways†	Redtop	5	For soils of high fertility, not droughty or very poorly drained, use 20 pounds of Kentucky bluegrass, 5 pounds of redtop, and 7 pounds of birdsfoot trefoil. If area cannot be mowed (near gully bank), use 40 pounds of tall fescue and 7 pounds of birdsfoot trefoil.
	Red Fescue	30	
	Birdsfoot Trefoil	7	
Pond Dikes†	Redtop	5	If pond is completed in September or October, sow 2 bushels of oats per acre and seed this mixture in early spring when ground is honeycombed. Kentucky bluegrass may be substituted for red fescue.
	Red Fescue	15	
	Birdsfoot Trefoil	10	

*Use 25 per cent more seed than recommended if seedbed is poorly prepared. To convert pounds of seed to quarts: **Legumes,** 2 pounds to a quart. **Timothy,** 1½ pounds to a quart. **Orchard and bromegrass,** ½ pound to a quart. **Sudan and Japanese millet,** 1 pound to a quart. **Kentucky bluegrass and Redtop,** weight varies.

†Recommendation by the Soil Conservation Service.

SOIL DRAINAGE CLASS



Soils are divided into natural drainage classes.

As the sloping "mottled" zones indicate in the above diagram, each drainage class has a range of wetness. Properly designed tile drainage, open ditches, or diversion terraces usually improve the soil moisture conditions for crops about one drainage class.

Drainage classes used in this table are:

Well drained: Plow layer dry enough to work nearly every year by the time grass begins to grow. Subsoil bright yellowish brown, brown, or reddish brown. No mottling to at least 24 inches.

Moderate: Spring work delayed only slightly. Upper subsoil like above BUT with faint mottling below 15 to 20 inches.

Somewhat Poor: Stays wet until late spring. Subsoil is pale or dull colored and strongly mottled below 6 to 12 inches showing that subsoil is often wet.

Poor: Too wet to work in regular crop rotation. Usually flat land. Dark gray plow layer; grayish subsoil with strong mottling.

Mottling: Yellow, orange, gray, or "rusty" spots in the subsoil indicating some degree of excess wetness of the soil.

Root Barrier: The air is cut off for long periods by excess water; in some soils a hardpan also limits root penetration. Some legumes, such as birdsfoot trefoil, grow satisfactorily when the root barrier is close to the surface; alfalfa does not.

Hardpan vs. Clayey Subsoil: Nearly all acid upland soils in the Southern Tier, Hudson Valley and North Country have a dense lower subsoil "root barrier" layer called a "hardpan." Most soils in Central New York and soils from clays in the North Country and in the Hudson Valley have a blocky structured clayey subsoil layer.

In soils having a hardpan, the pan is densest and closest to the surface on the wetter soils. It begins at 24 to 28 inches in well drained soils; at 20 to 24 inches in moderate; 15 to 18 inches in somewhat poor; and 10 to 15 inches in poorly drained soils. For good yields on these soils it is especially important for farmers to lime and fertilize liberally because the hardpans restrict root growth and water storage to the shallow layer of friable soil above the pan.

In soils having the clayey subsoil, the depth to this layer is mainly related to natural lime content and *not* to natural drainage class. The subsoil begins at 12 to 15 inches in the high-lime soils and at 15 to 22 inches in the medium-lime soils. On the well and moderately drained soils having a clayey subsoil, plants root more deeply and use the stored water and available potash from this layer.

A Publication of the
New York State College of Agriculture,
a Unit of the State University of New York,
at Cornell University,
Ithaca, New York